

CLAIMS

- 1 1. A method for facsimile transmission over a packet
2 network, comprising:
3 establishing a facsimile call between first and
4 second facsimile terminals in accordance with a facsimile
5 protocol, using a facsimile gateway to convey
6 communications between the terminals over the packet
7 network;
8 awaiting arrival at the gateway of a signal conveyed
9 over the packet network from the first terminal, to be
10 transmitted from the gateway to the second terminal as
11 provided by the protocol;
12 transmitting a fill page from the gateway to the
13 second terminal if the signal does not arrive within a
14 time limit determined in accordance with the protocol;
15 and
16 receiving the signal at the gateway and transmitting
17 the signal from the gateway to the second terminal after
18 transmitting the fill page.
- 1 2. A method according to claim 1, wherein the facsimile
2 protocol comprises a T.30 protocol of the International
3 Telecommunications Union (ITU-T).
- 1 3. A method according to claim 2, wherein the packet
2 network operates in accordance with an Internet Protocol
3 (IP).
- 1 4. A method according to claim 3, wherein establishing
2 the facsimile call comprises establishing a real-time fax
3 over IP connection, and wherein transmitting the fill
4 page comprises initiating a session fax mode of
5 communication in response to a network delay causing the
6 signal to fail to arrive within the time limit.

1 5. A method according to claim 4, wherein establishing
2 the real-time fax over IP connection comprises
3 establishing the connection in accordance with an ITU-T
4 T.38 protocol.

1 6. A method according to claim 1, wherein the first
2 terminal comprises a sending terminal, and the second
3 terminal comprises a receiving terminal, and wherein
4 awaiting the arrival of the signal comprises awaiting
5 transmission of a complete page of facsimile data from
6 the sending terminal.

1 7. A method according to claim 6, wherein the gateway
2 comprises a receiving gateway linked to the receiving
3 terminal by a telephone line, and wherein awaiting the
4 transmission of the complete page comprises awaiting the
5 transmission of the complete page by a sending gateway
6 linked to the sending terminal.

1 8. A method according to claim 1, and comprising
2 awaiting arrival of a training message indicative of
3 capabilities of the first terminal and conveyed over the
4 packet network from the first terminal, and if the
5 training message does not arrive within a training time
6 limit determined in accordance with the protocol,
7 initiating a default training sequence between the
8 gateway and the second terminal, substantially
9 independently of the capabilities of the first terminal.

1 9. A method according to claim 1, wherein the first
2 terminal comprises a receiving terminal, and the second
3 terminal comprises a sending terminal, which sends at
4 least one page of facsimile data to the receiving
5 terminal over the packet network using the facsimile

6 gateway during the facsimile call, and wherein awaiting
7 the arrival of the signal comprises awaiting a
8 notification of delivery of the at least one page to the
9 receiving terminal.

1 11. A method according to claim 9, wherein the at least
2 one page of facsimile data comprises first and second
3 pages of facsimile data, and comprising transmitting a
4 confirmation signal from the gateway to the sending
5 terminal after receiving the first page from the sending
6 terminal at the gateway, responsive to which the sending
7 terminal sends the second page to the gateway, before
8 receiving a confirmation packet at the gateway over the
9 network indicating that the first page was received at
10 the receiving terminal.

3 establishing a facsimile call between a sending
4 terminal and a facsimile gateway in communication with
5 the packet network;

8 conveying the first page of the facsimile data from
9 the gateway over the packet network to a receiving
10 terminal;

14 confirmation packet over the network indicating that the
15 first page was received at the receiving terminal;

16 responsive to transmitting the confirmation signal,
17 receiving a second page of facsimile data from the
18 sending terminal;

19 conveying the second page of the facsimile data over
20 the packet network to the receiving terminal;

21 awaiting arrival at the gateway of the first
22 confirmation packet and of a second confirmation packet
23 over the network indicating that the second page was
24 received at the receiving terminal; and

25 responsive to the first and second confirmation
26 packets, sending a notification from the gateway to the
27 sending terminal before terminating the facsimile call
28 that the pages were delivered to the receiving terminal.

1 13. A method according to claim 12, wherein establishing
2 the facsimile call comprises establishing the call in
3 accordance with a T.30 protocol of the International
4 Telecommunications Union (ITU-T).

1 14. A method according to claim 13, wherein the packet
2 network operates in accordance with an Internet Protocol
3 (IP).

1 15. A method according to claim 14, wherein establishing
2 the facsimile call comprises initiating a real-time fax
3 over IP connection, and wherein sending the notification
4 comprises completing the call in a session fax mode.

1 16. A method according to claim 15, wherein initiating
2 the real-time fax over IP connection comprises
3 establishing the connection in accordance with an ITU-T
4 T.38 protocol.

5 the training message does not arrive within a training
6 time limit determined in accordance with the protocol, to
7 initiate a default training sequence with the second
8 terminal, substantially independently of the capabilities
9 of the first terminal.

5 to receive a first page of facsimile data from the
6 sending terminal, to convey the first page of the
7 facsimile data over the packet network to a receiving
8 terminal, and to transmit a confirmation signal to the
9 sending terminal after receiving the first page without
10 having waited to receive a first confirmation packet over
11 the network indicating that the first page was received
12 at the receiving terminal, and further being adapted to
13 receive, responsive to the confirmation signal, a second
14 page of facsimile data from the sending terminal and to
15 convey the second page of the facsimile data over the
16 packet network to the receiving terminal, and still
17 further being adapted to await arrival over the network
18 of the first confirmation packet and of a second
19 confirmation packet indicating that the second page was
20 received at the receiving terminal and, responsive to the
21 first and second confirmation packets, to send a
22 notification to the sending terminal before terminating
23 the facsimile call that the pages were delivered to the
24 receiving terminal.

1 33. Apparatus according to claim 32, wherein the packet
2 network operates in accordance with an Internet Protocol
3 (IP).

1 35. Apparatus according to claim 34, wherein the gateway
2 is adapted to establish the real-time fax over IP
3 connection in accordance with an ITU-T T.38 protocol.

1 37. Apparatus according to claim 31, wherein the gateway
2 is configured to establish the call over a telephone line
3 between the sending terminal and the gateway.

1 39. A computer software product for facsimile
2 transmission over a packet network, comprising a
3 computer-readable medium in which program instructions
4 are stored, which instructions, when read by a facsimile
5 gateway computer in communication with the packet
6 network, cause the computer to establish a facsimile call
7 between first and second facsimile terminals in
8 accordance with a facsimile protocol and to convey
9 communications between the terminals over the packet
10 network, to await arrival of a signal conveyed over the
11 packet network from the first terminal to be transmitted
12 from the computer to the second terminal as provided by
13 the protocol, to transmit a fill page to the second
14 terminal if the signal does not arrive within a time

15 limit determined in accordance with the protocol, and
16 upon receiving the signal, to transmit the signal to the
17 second terminal after transmitting the fill page.

1 40. A computer software product for facsimile
2 transmission over a packet network, comprising a
3 computer-readable medium in which program instructions
4 are stored, which instructions, when read by a facsimile
5 gateway computer in communication with the packet
6 network, cause the computer to establish a facsimile call
7 with a sending terminal, to receive a first page of
8 facsimile data from the sending terminal, to convey the
9 first page of the facsimile data over the packet network
10 to a receiving terminal, and to transmit a confirmation
11 signal to the sending terminal after receiving the first
12 page without having waited to receive a first
13 confirmation packet over the network indicating that the
14 first page was received at the receiving terminal, and
15 further cause the computer to receive a second page of
16 facsimile data from the sending terminal responsive to
17 transmitting the confirmation signal, and to convey the
18 second page of the facsimile data over the packet network
19 to the receiving terminal, and still further cause the
20 computer to await arrival over the network of the first
21 confirmation packet and of a second confirmation packet
22 indicating that the second page was received at the
23 receiving terminal, and responsive to the first and
24 second confirmation packets, to send a notification to
25 the sending terminal before terminating the facsimile
26 call that the pages were delivered to the receiving
27 terminal.

00553131"083100